Attorney's Docket No. 00093

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Krzysztof Matyjaszewski,

et al.

CATALYTIC PROCESSES FOR THE

CONTROLLED POLYMERIZATION OF FREE

: RADICALLY (CO)POLYMERIZABLE

Art Unit : MONOMERS AND FUNCTIONAL POLYMERIC

SYSTEMS PREPARED THEREBY

Serial No.:

Filed:

INFORMATION DISCLOSURE STATEMENT

Pittsburgh, Pennsylvania 15222 March 23, 2000

Hon. Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir:

Applicants, in accordance with the duty of disclosure pursuant to 37 C.F.R. § 1.56, hereby advise the United States Patent and Trademark Office of the reference(s) listed on the accompanying form PTO 1449 "Information Disclosure Citation". A copy of each reference cited therein is herewith enclosed. Applicants

believe that the instant Information Disclosure Statement ("IDS") fully complies with the disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98, as revised effective March 16, 1992, inasmuch as under revised rule 37 C.F.R. § 1.98 there is no requirement for Applicants to explain the relevance of the English language references cited in the IDS.

Respectfully submitted,

Christine R. Ethridge

Registration No. 30,557

Kirkpatrick & Lockhart LLP Henry W. Oliver Building 535 Smithfield Street Pittsburgh, PA 15222-2312

Phone: (412) 355-8619 Fax: (412) 355-6501

Atty. Docket No.	Serial No.
00093	
·	
Applicant: Krzysztof Matyja	sjewski, et al.
	Group
	00093

U. S. PATENT DOCUMENTS

Examiner Initial	Document Number	Patentee	Issue Date	Class	Sub- Class	Filing Date
	5,763,548	Matyjaszewski, et al.	June 9, 1998			
	5,789,487	Matyjaszewski, et al.	August 4, 1998			
	5,807,937	Matyjaszewski, et al.	September 15, 1998			
·	5,910,549	Matyjaszewski, et al.	June 6, 1999			
i	5,945,491	Matyjaszewski, et al.	August 31, 1999			
	5,986,015	Midha, et al.	November 16, 1999			

FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

Examiner Initial	Document Number	Public. Date	Country or Patent Office	Class	Sub- Class	Transl Y	N

OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)

Jin-Shan Wang and Krzysztof Matyjaszewski, Controlled/"Living" Radical Polymerization. Halogen Atom Transfer Radical Polymerization Promoted by a Cu(I)/Cu(II) Redox Process, Reprinted from Macromolecules, 1995, 28. Department of Chemistry, Carnegie Mellon University. Received May 2, 1995; Revised Manuscript Received August 14, 1995.
Kyung-Youl Baek, Masami Kamigaito and Mitsuo Sawamoto, Synthesis of Star-Shaped Polymers with Divinyl Compounds by Metal-Catalyzed Living Radical Polymerization, Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, Kyoto 606-8501, Japan, Polymer Preprints 472-473.

	Yuzo Kotani, Masami Kamigaito and Mitsuo Sawamoto, <i>Living Random</i> Copolymerization of Styrene and Methyl Methacrylate with a Ru(II) Complex and Synthesis of ABC-Type "Block-Random" Copolymers, Macromolecules, 1998. Received February 25, 1998; Revised Manuscript Received June 18, 1998.
	Jin-Shan Wang and Krzysztof Matyjaszewski, Controlled/"Living" Radical Polymerization. Atom Transfer Radical Polymerization in the Presence of Transition-Metal Complexes. Reprinted form the Journal of the American Chemical Society, Vol. 117, No. 20, 1995.
	Mitsuru Kato, Masami Kamigaito, Mitsuo Sawamoto and Toshinobu Higashimura, Polymerization of Methyl Methacrylate with the Carbon Tetrachloride/Dichlorotris-(triphenylphosphine)ruthenium (II) Methylaluminum Bis(2,6-di-tert-butylphenoxide) Initiating System: Possibility of Living Radical Polymerization, Macromolecules, 1995. Received September 6, 1994. Revised Manuscript Received November 28, 1994.
	Timothy E. Patten and Krzysztof Matyjaszewski, <i>Atom Transfer Radical Polymerization and the Synthesis of Polymeric Materials</i> , Advanced Materials 1998 10 No. 12, 901-915.
	Tsuyoshi Ando, Masami Kamigaito and Mitsuo Sawamoto, <i>Iron(II) Chloride Complex for Living Radical Polymerization of Methyl Methacrylate</i> , Macromolecules, Volume 30, Number 16, August 11, 1997.
	C. Granel, Ph. Dubois, R. Jèrôme and Ph. Teyssiè, Controlled Radical Polymerization of Methacrylic Monomers in the Presence of a Bis(ortho-chelated) Arylnickel(II) Complex and Different Activated Alkyl Halides, Macromolecules, 1996, 29, 8576-8582.
i	Hiroko Uegaki, Yuzo Kotani, Masami Kamigaito and Mitsuo Sawamoto, <i>Nickel-Mediated Living Radical Polymerization of Methyl Methacrylate</i> , Macromolecules, 1997, 30, 2249-2253.
	Virgil Percec, Bogdan Barboiu, Andreas Neumann, Joan C. Ronda and Mingyang Zhao, Metal-Catalyzed "Living" Radical Polymerization of Styrene Initiated with Arenesulfonyl Chlorides. From Heterogeneous to Homogeneous Catalysis, Macromolecules, 1996, 29, 3665-3668.
	G. Moineau, C. Granel, Ph. Dubois, R. Jèrôme and Ph. Teyssiè, Controlled Radical Polymerization of Methyl Methacrylate Initiated by an Alkyl Halide in the Presence of the Wilkinson Catalyst, Macromolecules, 1998, 31, 542-544.
	Mingli Wei, Jianhui Xia, Nancy E. McDermott and Krzysztof Matyjaszewski, Atom Transfer Radical Polymerization of Styrene in the Presence of Iron Complexes, Polymer Preprints, 38(2), 231 (1997), Department of Chemistry, Carnegie Mellon University.
	G. Moineau, Ph. Dubois, R. Jèrôme, T. Senninger and Ph. Teyssiè, Alternative Atom Transfer Radical Polymerization for MMA Using FeCl ₃ and AIBN in the Presence of Triphenylphosphine: An Easy Way to Well-Controlled PMMA, Macromolecules, 1998, 31, 545-547.

Timothy E. Patten, Jianhui Xia, Teresa Abernathy and Krzysztof Matyjaszewski, Polymers with Very Low Polydispersities from Atom Transfer Radical Polymerization, Science, Reprint Series, 10 May 1996, Volume 272, pp. 866-868.
Patrick S. Wolfe and SonBinh T. Nguyen, Atom Transfer Radical Polymerization of Styrene Utilizing an Iron (II) Complex of a Tetradentate Schif-Base, Department of Chemistry, Northwestern University, Polymer Preprints 552-553.
Marc Husseman, Eva E. Malmström, Molly McNamara, Mathew Mate, David Mecerreyes, Didier G. Benoit, James L. Hedrick, Paul Mansky, E. Huang, Thomas P. Russell and Craig J. Hawker, Controlled Synthesis of Polymer Brushes by "Living" Free Radical Polymerization Techniques, Macromolecules, Vol. 32, No. 5, 1424 (1999).
Muhammad Ejaz, Shinpei Yamamoto, Kohji Ohno, Yoshinobu Tsujii and Takeshi Fukuda, Controlled Graft Polymerization of Methyl Methacrylate on Silicon Substrate by the Combined Use of the Langmuir-Blodgett and Atom Transfer Radical Polymerization Techniques, Macromolecules, Vol. 31, No. 17, 1998.
Jianhui Xia and Krzysztof Matyjaszewski, Controlled/"Living" Radical Polymerization. Homogeneous Reverse Atom Transfer Radical Polymerization Using AIBN as the Initiator, Macromolecules, Vol. 30, No. 25, 7692-7696, 1997.
Krzysztof Matyjaszewski, Simion Coca, Scott G. Gaynor, Mingli Wei and Brian E. Woodworth, Zerovalent Metals in Controlled/"Living" Radical Polymerization, Macromolecules, Vol. 30, No. 23, 1997, 7348-7350.
Stefan A. F. Bon, Michiel Bosveld, Bert Klumperman and Anton L. German, Controlled Radical Polymerization in Emulsion, Macromolecules, Vol. 30, No. 2, 1997, 324-326, Communications to the Editor.
Simion Coca, Christina B. Jasieczek, Kathryn L. Beers and Krzysztof Matyjaszewski, <i>Polymerization of Acrylates by Atom Transfer Radical Polymerization. Homopolymerization of 2-Hydroxyethyl Acrylate</i> , Journal of Polymer Science, Part A: Polymer Chemistry, Vol. 36, 1417-1424 (1998).
Masami Kamigaito and Mitsuo Sawamoto, <i>Transition Metal-Catalyzed Living Radical Polymerization: Recent Progress</i> , Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, Kyoto 606-8501, Japan, Polymer Preprints, 325-326.
Timothy von Werne and Timothy E. Patten, <i>The Preparation of Polymer-Inorganic Hybrid Nanoparticles Using Controlled/Living Radical Polymerization</i> , Department of Chemistry, University of California, Polymer Preprints, 354-355.
Shingtza Liou, Dennis Malaba, William J. Brittain, Youngjoon Lee and Roderic P. Quirk, Atom Transfer Radical Polymerization of Methyl Methacrylate with Polyethylene-Functionalized Ligands, Department of Polymer Science, University of Akron, Ohio, Polymer Preprints, 380-381.
Yuzo Kotani, Masami Kamigaito and Mitsuo Sawamoto, <i>Transition Metal-Mediated Living Radical Polymerization of Styrene: Design of Initiating Systems</i> , Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, Kyoto 606-8501, Japan, Polymer Preprints, 468-469.

¥

KYUNG-Youl Baek, Masami Kamigaito and Mitsuo Sawamoto, Shaped Polymers with Divinyl Compounds by Metal-Catalyzed Leading Polymerization, Department of Polymer Chemistry, Graduate Sciengineering, Kyoto University, Kyoto 606-8501, Japan, Polymer 473.	Living Radical chool of	
Naida S. Gill, Complex Halides of the Transition Metals. Part II., Complexes, Journal Chem Soc., 3512 (1961).	Tetrahedral Iron	
C. A. Clausen, III and M. L. Good, <i>Mössbauer and Far-Infrared Studies of Tetrahaloferrate Anions of the Type FeCl_{1-n}Br_n</i> , Inorganic Chemistry, Vol. 9, No. 2, p. 220 (1970).		
Gordon D. Sproul and G. D. Stucky, <i>The Structure of Bis(methyl Tetrabromoferrate(III) Bromide,</i> (H ₃ CNH ₃) ₂ [FEBr ₄]Br, Inorganic CNO. 7, 1647-1650 (1972).	<i>lammonium)</i> Chemistry, Vol. 11,	
Kim R. Dunbar and Anne Quillevéré, [Fe ₂ Cl ₆] ² : A Discrete Form of Ferrous Chloride, Angew. Chem, Int. Ed. Engl. Vol. 32, No. 2, 293-295 (1993).		
A. P. Philipse and A. Vrij, <i>Preparation and Pra Dispersions of Chemically Modified, Charged</i> Interface Science, Vol 128, No. 1, March 1, 1	del Coo collid and	
Controlled "Living" Emulsion Polymerization (Emulsion Polymerization.	!om	
Krzysztof Matyjaszewski, Mingli Wei, Jianhui Controlled/"Living" Radical Polymerization of Catalyzed by Iron Complexes ¹ , Macromolecules, Vol. 30, No. 20	ott, <i>rylate</i> o, 1887.	
Matyjaszewski, et al., U.S. Application Serial No. 09/126,768, Fi	led July 31, 1998.	
Matyjaszewski, et al., U.S. Application Serial No. 09/018,554, Fi	led February 4,	

EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.